

# STEM STEW

Science, Technology, Engineering, Math

## DESIGN CHALLENGES

### ***Fashion Show***

Create clothing, furniture and accessories for the fashion show!

### ***Builder's Showcase***

Build better shelter & structures to protect and help people in need.

### ***Green Machine Grand Prix***

Build and race rockets, cars & gliders

### ***Carnival & Arcade***

Design a dance pad, target games, and video games.

### ***Olympic Village***

This is an advanced level challenge to plan the logistics of the Summer Olympics.

Science, Technology, Engineering, & Math are increasingly digital, networked and rapidly changing. To meet the recommendations of the National Academy of Sciences and the National Governor's Association agenda for STEM, the Lincoln Intermediate Unit STEM Advisory Council is improving the STEM skills to better prepare our local students for 21st century college and career expectations through a design challenge.

All student designs will be showcased on June 28th in the afternoon. Plan to celebrate with your student and see what they have learned!

## DESIGN CHALLENGE

**Lincoln Intermediate Unit # 12**

**June 25th — 28th**

**9 am — 3 pm**

**Ages 9 – 12**

(APPLICATIONS WILL BE PROCESSED IN THE ORDER THEY ARE RECEIVED, 200 RESERVATIONS WILL BE ACCEPTED. SEE PAGE 3 FOR REGISTRATION DETAILS)

Registration deadline: June 11, 2012

INVENT!

Learn the Design Process

Build—Test—Re-evaluate—Design

Expand Thinking

Become Innovative

Learn from Mistakes

Develop Engineering Skills

Work as a Team

Communicate

WHY STEM?

### **21st Century Skills:**

Among the most critical academic disciplines for success in a 21st century work force are those involving Science, Technology, Engineering and Math (STEM).

### **College & Career Ready:**

It has been reported that more than a million jobs will open up that require specialized technology skills in the next seven years, according to the U. S. Labor Statistics. But there won't be enough **qualified** college graduates to fill them.

**PA Green Jobs Report:** Pennsylvania is among the states with the highest number of green jobs. Potential jobs will be in energy efficiency, renewable energy, clean transportation, pollution prevention & environmental cleanup. Design is involved in all of these jobs.

**Lincoln Intermediate Unit**  
**65 Billerbeck Street**  
**New Oxford PA 17350**

# Help Shape the Future and Join a Design Team

Brainstorm, Design, Build, Test and Re-design (All sessions will be taught by certificated educators).  
Choose one of the following challenges!



Fashion Design

## Fashion & Furniture Challenge

Design and create furniture and clothing from basic materials to fill a room or a wardrobe. Through experimentation with the materials at hand students will explore ways to make the furniture stronger or clothing to size. Mobiles, kinetic sculpture, and battery powered accent pieces can be used to accessorize. By designing, building, testing and re-designing, they will be able to improve their project for the Fashion and Furniture Show. Goals; build a table at least 8 inches tall and strong enough to hold a book, a sturdy, foldable chair, make clothes from newspaper, and more!!!!



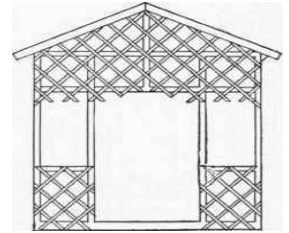
Structures



Shelter

## Shelter & Structures Challenge

Build it better! Design a structure to protect people from tornadoes, carriers for wheel chairs or crutches, speedy shelter for emergencies, or a device to deliver a care package safely to disaster areas. Building cranes, towers, bridges and objects to scale are other challenge options in this category. Through trial and re-design your child will be challenged by the laws of physics and gravity as they prepare for a Builder's Showcase.



Furniture Design



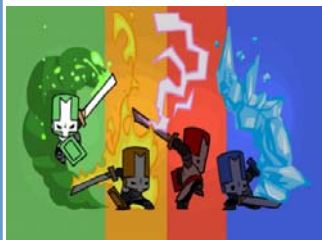
Grand Prix

## Green Machines & Motion Challenge

Design and build an air-powered rocket that can hit a distant target, a solar water heater, and a rubber band-powered rover that can scramble across the floor in the NASA challenge. Make a helium balloon hover and navigate through an obstacle course, build a rubber band car that goes fast and far, a battery powered car that goes 10 feet, or a high performance glider in the Green Machine Grand Prix. Zip lines, grabbing devices, and biomedical devices can be explored too!



Lunar Rover



Video Games

## Carnival & Arcade Challenge

What game shall we play? That is up to you! Build buzz boards, zip lines, launchers, and marble runs to create a dance pad, target games, mini roller coaster, or a new carnival game. Use Gamestar Mechanic to create an original math video game for younger children. Through the design process of brainstorm, design, build, test, and re-design create a Carnival or Arcade to showcase the games created during the week!



Pinball

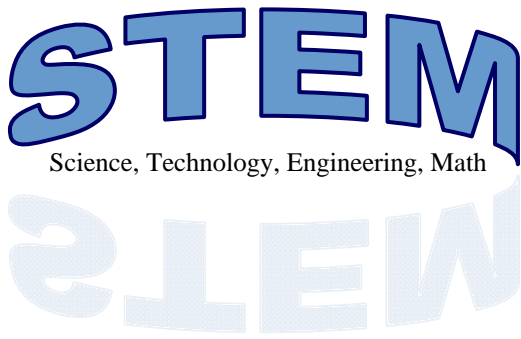


## Planning Event Logistics—Olympics Challenge

*\*Advanced Level Challenge\**

The 2012 Summer Olympic games presents a real-world challenge in planning a large scale sporting event. Challenges include reducing the carbon footprint of spectators travelling to London, design an interesting, informative website to help travelers, designing an Olympic application for smart phones, create scale size venues for events and housing. Student designs will be showcased in their own Olympic Village.





## Registration Form DESIGN CHALLENGE

**Lincoln Intermediate Unit # 12**  
**65 Billerbeck Street, New Oxford PA**  
♦ June 25th — 28th 9 am — 3 pm

**Registration deadline: June 11, 2012**

### Option 1: On-line Registration and Payment

- **On-line registration**
  - **To pay online using PayPal click here for the website and enter your student's name**
- Registration confirmations will be emailed 10 days prior to event.

### Option 2: PAPER REGISTRATION:

Child's Name: \_\_\_\_\_ School Entity: \_\_\_\_\_

Address: \_\_\_\_\_  
Street City State Zip

Phone #: \_\_\_\_\_ Email: \_\_\_\_\_ Child's Age \_\_\_\_\_ / \_\_\_\_\_  
Birthdate

**Please indicate which (ONE) Design Challenge your child would like to participate in for the week.**

- ☐ Fashion & Furniture Challenge ☐ Shelter & Structures Challenge  
☐ Green Machines & Motion Challenge ☐ Carnival & Arcade Challenge  
☐ Planning Event Logistics—Olympics Challenge \*Advanced Level Challenge\*

**Return completed registration form with \$180.00 payment per student to:**

- LIU # 12, 65 Billerbeck Street, New Oxford, PA 17350
- Email: bkdillman@iu12.org

**Fax: (717)624-6522 or**  
**Questions: Phone (717)624-6401**

**NOTICE:** The LIU Design Challenge is solely run by the Lincoln Intermediate Unit #12. Local school districts, private schools and their employees have no authority in decision making associated with the LIU Design Challenge. All information/applications submitted to the LIU #12 become the property of the LIU #12 and remain confidential. Information contained therein will not be released to anyone, for any reason, at any time.

All participants must be between the ages of 9 & 12 by June 25, 2012.

***The LIU reserves the right to cancel any challenge because of insufficient enrollment and/or extenuating circumstances.***

#### **Registration Guidelines:**

- Registrations will be accepted through June 11.
- Registrations will be processed in the order they are received.
- A registration is complete when the registration form and payment-in-full is received.
- Payment may be made via Pay Pal, check, or money order.
- Registration forms may be returned via on-line form or USPS mail.
- Registration closes after the first 200 complete applications have been received.
- Any registrations received after the first 200 complete applications will be added to a wait list.
- Participation will be confirmed through e-mail or USPS mail. E-mail, if available will be the primary method of communication.
- Following confirmation, medical forms must be completed and returned.
- Refunds will be granted in the following increments:
  - A full refund up to one month prior (April 25, 2012)
  - 50% refund up to 2 weeks prior (June 11, 2012)
  - No refund for anything less than 2 week notice (June 12 - June 28, 2012)